

What is claimed is:

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1. A coin mechanism comprising:  
one or more coin tubes for storing,  
respectively, coins of one or more denominations;  
5 a dispenser for controlling the dispensing of  
coins from the coin tubes; and  
a coin mechanism controller suitable for  
connection to a controller in an automatic transaction  
system so as to receive change dispense signals from the  
10 automatic transaction system controller indicating the form  
of dispensing change to a customer, wherein the coin  
mechanism controller, when connected to the automatic  
transaction system controller, serves as an interface  
between the automatic transaction system controller and the  
15 dispenser, and wherein the coin mechanism controller is  
programmed to re-determine the form of paying out the  
change.

2. The coin mechanism of claim 1 wherein the  
coin mechanism controller is programmed to re-determine the  
20 coin denominations in which the change is to be dispensed by  
taking into account the distribution and denominations of  
coins in the coin tubes.

3. The coin mechanism of claim 1 wherein the  
coin mechanism controller is programmed to re-determine the  
25 number and denomination of coins in which the change is to  
be dispensed when the set of available coin denominations in  
the coin tubes differs from the set of coin denominations  
which the automatic transaction system controller is  
programmed to handle.

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4. The coin mechanism of claim 1 wherein the coin mechanism controller is programmed to re-determine the number and denomination of coins in which the change is to be dispensed when the set of available coin denominations in the coin tubes differs from the coin denominations corresponding to the change dispense signals received from the automatic transaction system.

5. A coin mechanism according to claim 1 suitable for connection to an automatic transaction system controller capable of providing signals indicating the number and denomination of coins in which change is to be dispensed using three different coin denominations, wherein the coin mechanism comprises four coin tubes for storing, respectively, coins of four different denominations.

6. A coin mechanism according to claim 1 suitable for connection to an automatic transaction system controller capable of providing signals indicating the number and denomination of coins in which change is to be dispensed using three different coin denominations, wherein the coin mechanism comprises two coin tubes for storing coins of a first denomination and two coin tubes for storing coins of a second denomination.

7. A coin mechanism according to claim 1 suitable for connection to an automatic transaction system controller capable of providing signals indicating the number and denomination of coins in which change is to be dispensed using three different coin denominations, wherein the coin mechanism comprises four coin tubes for storing coins of a single denomination.

34B A2> 8. The coin mechanism of claim 5 wherein the three coin denominations are U.S. nickels, dimes and quarters, and wherein the four coin denominations are U.S. nickels, dimes, quarters and one-dollars coins.

5 9. The coin mechanism of claim 2 wherein the coin mechanism controller is programmed to re-determine the number and denomination of coins in which the change is to be dispensed using as many available higher denomination coins as possible.

10 10. The coin mechanism of claim 2 wherein the coin mechanism controller is programmed to monitor the change dispense signals from the automatic transaction controller, to accumulate values corresponding to the monitored signals, and to control the dispenser to dispense  
15 change from the coin tubes only after no further change dispense signal is received for at least a specified duration following the previous change dispense signal.

20 11. The coin mechanism of claim 2 wherein the coin mechanism controller is programmed to monitor the change dispense signals from the automatic transaction controller, to accumulate values corresponding to the monitored signals, and to control the dispenser to dispense  
25 change from the coin tubes once the accumulated total value is at least equal to or higher than the value of the highest available coin denomination in the coin tubes.

12. The coin mechanism of claim 2 wherein the coin mechanism controller is programmed to monitor the change dispense signals from the automatic transaction controller, to accumulate values corresponding to a

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predetermined number of the monitored signals, and to control the dispenser to dispense change from the coin tubes immediately following receipt of the predetermined number of monitored signals.

- 5 13. An automatic transaction system comprising:  
a coin insert slot;  
a coin return;  
a system controller for determining the amount  
of change due a customer and the number and denominations of  
10 coins in which the change is to be dispensed, wherein the  
system controller uses a particular set of coin  
denominations for determining the form in which change is to  
be dispensed;  
a coin mechanism connected to the coin insert  
15 slot and the coin return, comprising:  
(a) sensors for generating signals indicative  
of the characteristics of an inserted coin;  
(b) a coin mechanism controller programmed to  
determine whether the inserted coin is acceptable based on  
20 the signals generated by the sensors;  
(c) one or more coin tubes for storing,  
respectively, acceptable coins of one or more denominations;  
(d) a dispenser for controlling the dispensing  
of coins from the coin tubes in response to dispense signals  
25 from the coin mechanism controller; and  
communication lines connecting the coin  
mechanism controller and the system controller, whereby the  
coin mechanism receives change dispense signals from the  
system controller indicating the number and coin  
30 denominations of coins in which change is to be dispensed,  
and wherein the coin mechanism controller is programmed to  
re-determine the number and denominations of coins in which

SUB A2> the change is to be dispensed by taking into account the distribution and denominations of coins in the coin tubes.

14. The automatic transaction system of claim 13 wherein the coin tubes store, respectively, a different set of coin denominations from the coin denominations used by the system controller for determining the form in which change is to be dispensed.

15. The automatic transaction system of claim 13 wherein the coin tubes store, respectively, four different coin denominations and wherein the system controller uses a set of three different coin denominations for determining the form in which change is to be dispensed.

16. A coin mechanism suitable for receiving a removable, replaceable cassette having one or more coin tubes for storing, respectively, coins of one or more denominations, the coin mechanism comprising:

a coin mechanism controller suitable for connection to a controller in an automatic transaction system so as to receive change dispense signals from the automatic transaction system controller indicating the coin denominations in which change is to be dispensed to a customer, wherein the coin mechanism controller, when connected to the automatic transaction system controller, serves as an interface between the automatic transaction system controller and a coin dispenser, and wherein the coin mechanism controller is programmed to re-determine the number and denominations of coins in which the change is to be dispensed by taking into account the distribution and denominations of coins in the coin tubes;

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a dispenser for controlling, in response to  
dispense signals from the coin mechanism controller, the  
dispensing of coins from the coin tubes in the cassette; and  
a keypad for entering a code to identify to the  
5 coin mechanism controller the arrangement and corresponding  
denominations of coin tubes in the cassette.

17. The coin mechanism of claim 16 further  
comprising a coin passageway, sensors for generating signals  
indicative of the characteristics of an inserted coin, and a  
10 coin separator, wherein the coin mechanism controller is  
further programmed to determine whether an inserted coin is  
acceptable and to determine the denomination of the coin  
based on the signals generated by the sensors, and wherein  
the coin mechanism controller controls the coin separator to  
15 divert an accepted coin to one of the coin tubes  
corresponding to the denomination of the accepted coin.

18. A method of providing change from an  
automatic transaction system comprising:  
generating change dispense signals  
20 corresponding to the number and denomination of coins in  
which the change is to be dispensed;  
receiving the change dispense signals in a coin  
mechanism controller;  
re-determining the number and denomination of  
25 coins in which the change is to be dispensed by taking into  
account the distribution and denominations of coins in coin  
tubes associated with the coin mechanism;  
generating new change dispense signals based on  
the step of re-determining to control the operation of a  
30 coin dispenser; and

Sub A2 > dispensing coins from the coin tubes according  
to the number and denominations determined by the coin  
mechanism controller.

5 19. The method of claim 18 wherein re-  
determining occurs when the set of available coin  
denominations in the coin tubes differs from the set of coin  
denominations corresponding to the signals received by the  
coin mechanism controller.

10 20. The method of claim 18 wherein re-  
determining comprises re-determining the number and  
denomination of coins in which the change is to be dispensed  
using as many available higher denomination coins as  
possible.

15 21. The method of claim 20 further comprising:  
monitoring the coin dispense signals received  
in the coin mechanism controller;  
accumulating values corresponding to the  
monitored signals; and  
20 controlling the dispenser to dispense change  
from the coin tubes only after no further coin dispense  
signal is received by the coin mechanism controller for at  
least a specified duration following the previously received  
change dispense signal.

25 22. The method of claim 20 further comprising:  
monitoring the coin dispense signals received  
in the coin mechanism controller;  
accumulating values corresponding to the  
monitored signals; and

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controlling the dispenser to dispense change from the coin tubes once the accumulated total value is at least equal to or higher than the value of the highest available coin denomination in the coin tubes.

5           23. The method of claim 20 further comprising:  
monitoring the coin dispense signals received in the coin mechanism controller;

accumulating values corresponding to a predetermined number of the monitored signals; and

10           controlling the dispenser to dispense change from the coin tubes immediately following receipt of the predetermined number of monitored signals.

24. The method of claim 18 wherein generating change dispense signals includes generating signals  
15           corresponding to four quarters, and wherein dispensing includes dispensing a single one-dollar coin.

25. A method of identifying a coin tube arrangement during replacement of a coin tube cassette in a coin mechanism:

20           entering a code corresponding to the coin tube arrangement using a keypad connected to the coin mechanism;

recognizing the code; and  
operating the coin mechanism with said cassette inserted in the coin mechanism.

25           26. The method of claim 25 wherein the code comprises a plurality of letters.

27. The method of claim 25 wherein the code comprises a plurality of numbers.



28. The method of claim 25 wherein the code comprises a combination of letters and numbers.

29. The method of claim 25 wherein the code comprises a specified sequence of letters and numbers.

5           30. The method of claim 25 further comprising storing coins accepted by the coin mechanism in the coin tubes of the cassette.

10           31. The method of claim 25 further comprising providing change to a customer using coins stored in the coin tubes of the cassette.

15           32. A method of accumulating currency in an automatic transaction system comprising:  
            receiving an inserted coin in a coin mechanism;  
            routing the coin to one of a plurality of coin  
            storage tubes; and  
            generating a signal indicating that the coin  
            was routed to a cash box.

20           33. The method of claim 32 further comprising controlling a bill validator, in response to said signal, to accept bills of a specified denomination.

25           34. A method of accumulating currency in an automatic transaction system comprising:  
            receiving an inserted coin in a coin mechanism;  
            routing the coin to a cash box;  
            generating a signal indicating that the coin  
            was routed to one of a plurality of coin storage tubes.

35. The method of claim 34 further comprising  
controlling a bill validator, in response to said signal, so  
as to reject bills of a specified denomination.

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